SUMMARY OF STATE HERITAGE PLACE

Entry in the South Australian Heritage Register in accordance with s14(1)(a) of the *Heritage Places Act 1993*

NAME: Gladstone Bulk Grain Handling Complex **PLACE NO.:** 26603

ADDRESS: Nukunu Country

16251 Horrocks Highway, Lot 14 Gladstone Street, and Lot 6 Horrocks Highway

Gladstone SA 5473

CT 5912/49 D63290 A12, CT 5855/563 D187795 A473, CT 6142/183 D78107 A14, CT 5834/834 D7491 A8, CT 5834/834 D7491 A9

STATEMENT OF HERITAGE SIGNIFICANCE

Established by the South Australian Co-operative of Bulk Handling (SACBH) in 1957, the Gladstone Bulk Grain Handling Complex is associated with the industrialisation of South Australia's grain industry through the adoption of bulk handling. The complex grew steadily throughout the second half of the twentieth century to become one of the largest in the state. When SACBH demutualised in 2000, the Gladstone Bulk Grain Handling Complex had a capacity of approximately 500,000 tonnes, demonstrating the success of SACBH and the implementation of bulk handling in South Australia. The complex retains a diverse range of storage types representing two key periods in the history of bulk grain handling in South Australia, namely SACBH's establishment in the 1950s and its later expansion between 1980 and 2000.

RELEVANT CRITERIA (under section 16 of the Heritage Places Act 1993)

(a) it demonstrates important aspects of the evolution or pattern of the State's history

The complex at Gladstone is associated with the industrialisation of South Australia's grain industry through the adoption of bulk handling and, consequently, the agricultural expansion and economic development of the state during the second half of the twentieth century. Bulk handling transformed the state's agricultural industry, facilitating cost- and time-effective storage and

transportation of grain to export terminals, ensuring that South Australian farmers remained competitive in the world market.

Following the assent of the *Bulk Handling of Grain Act 1955*, the South Australian Co-operative of Bulk Handling (SACBH) constructed an extensive network of over 100 upcountry storage sites and seven port terminals across agricultural areas of the state. Bulk grain storage was first erected by the SACBH at Gladstone in 1957 in the form of a four-cell concrete vertical silo. The complex grew steadily during the 1960s, with horizontal shed storage and additional concrete vertical storage built to accommodate consecutive bumper harvests and storage overflow from neighbouring sites.

SACBH's storage network underwent its largest period of expansion during the 1990s in response to market deregulation, increased grain production and diversification, greater market demand, and limitations on shipping caused by conflicts such as the Gulf War (1990-1991). Growth was concentrated at 33 strategic sites developed by the SACBH to increase efficiency of the state's bulk handling network. Each site was upgraded to offer greater storage capacity, grain and grade segregations, faster intake and outloading facilities, longer operating hours and quicker turnaround times. Preferred storage types constructed by the SACBH during this period were bunkers and paired sheds with shared elevators. Between 1992 and 2000, SACBH's storage capacity increased by 5.2 million tonnes, with more storage having been built during this period than in the previous 40 years combined.

The Gladstone strategic site was established along the railway line on the outskirts of town and was comprised of bunker storage, horizontal sheds, and paired sheds connected by conveyor belt to two 1,000 tonne railway outloading bins. At the time of SACBH's demutualisation in 2000, the Gladstone Bulk Grain Handling Complex was the state's largest bulk grain receival and storage facility, with a capacity of over 500,000 tonnes. The place retains a diverse range of storage types from two key periods in the history of bulk grain handling in South Australia, namely SACBH's establishment in the 1950s and its later expansion between 1980 and 2000. Despite twenty-first century upgrades to the classification and weighbridge facilities, the place retains a high level of intactness and integrity which allows the evolution of SACBH and bulk grain handling in South Australia to be understood and appreciated.

(g) it has special association with the life or work of a person or organisation or an event of historical importance

The Gladstone Bulk Grain Handling Complex is associated with the South Australian Co-operative of Bulk Handling (SACBH). The SACBH was a growers co-operative established in 1954 and held the exclusive right to handle wheat and

other grains in bulk within the state, ultimately facilitating South Australia's transition from bagged to bulk handling of grain. The SACBH constructed a comprehensive network of over 100 bulk storage facilities and seven port terminals, including the facility at Gladstone in 1957.

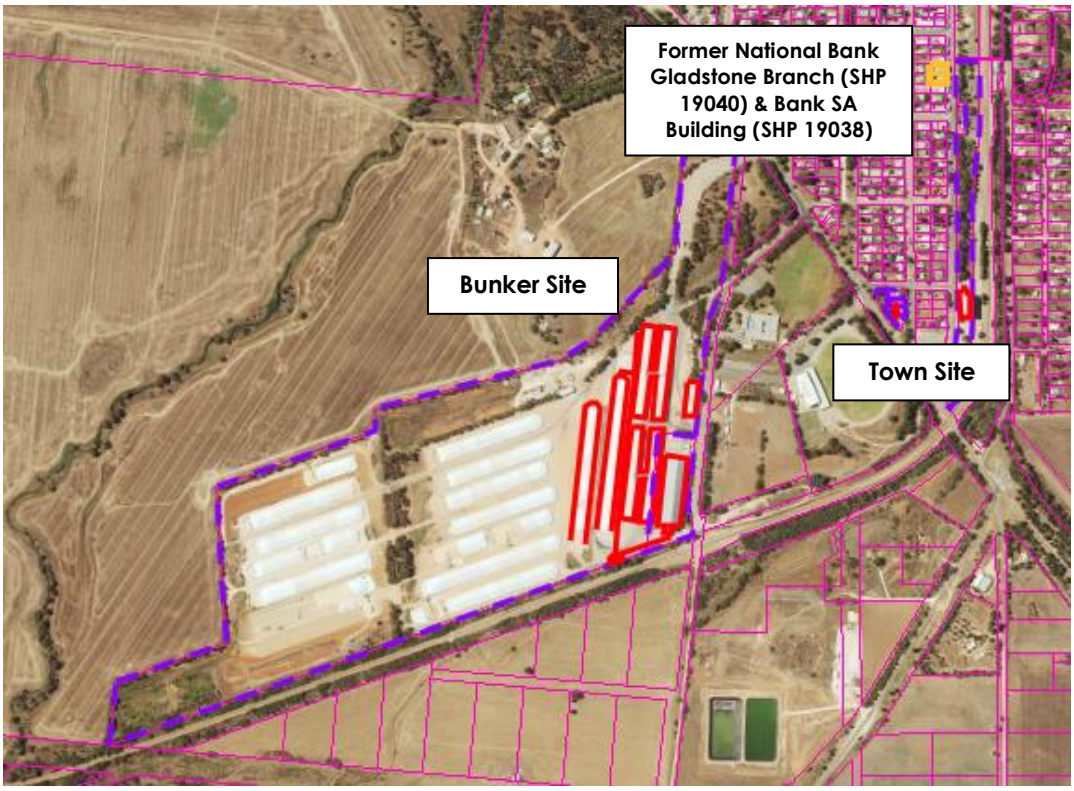
Of the upcountry bulk grain handling facilities that survive, Gladstone is considered to demonstrate a special association with the SACBH. The complex at Gladstone grew considerably during the second half of the twentieth century to become one of the largest inland storage facilities in South Australia with a capacity in excess of 500,000 tonnes. Its remaining structures, representing a variety of storage types, demonstrate the evolution and success of the SACBH and their bulk grain handling network throughout the second half of the twentieth century, in particular their response to various challenges such as market deregulation, increased grain production and diversification and expanding market demand.

SITE PLAN, PHYSICAL DESCRIPTION & ELEMENTS OF SIGNIFICANCE

Entry in the South Australian Heritage Register in accordance with s14(2)(a) of the *Heritage Places Act 1993*

Gladstone Bulk Grain Handling Complex **PLACE NO.: 26603**

16251 Horrocks Highway, Lot 14 Gladstone Street, and Lot 6 Horrocks Highway Gladstone SA 5473



Gladstone Bulk Grain Handling Complex, 16251 Horrocks Highway, Gladstone 5473 (CT 5912/49 D63290 A12, CT 5855/563 D187795 A473, Hundred of Booyoolie), Lot 14 Gladstone Street, Gladstone 5473 (CT 5834/834 D7491 A8, CT 5834/834 D7491 A9, Hundred of Booyoolie and Yangya), and Lot 6 Horrocks Highway, Gladstone 5473 (CT 6142/183 D78107 A14, Hundred of Booyoolie)

LEGEND **N ↑**

Parcel boundaries (Indicates extent of Listing)

Existing State Heritage Place(s)

Outline of Elements of Significance for State Heritage Place – Red outline is indicative of elements of significance, noting imperfect alignment of aerial imagery with parcel cadastre.

Town Site, Gladstone Bulk Grain Handling Complex, Lot 14 Gladstone Street, Gladstone 5473 (CT 6142/183 D78107 A14, Hundred of Booyoolie and Yangya), and Lot 6 Horrocks Highway, Gladstone 5473 (CT 5834/834 D7491 A8, CT 5834/834 D7491 A9, Hundred of Booyoolie)

LEGEND **N ↑**

Parcel boundaries (Indicates extent of Listing)

Outline of Elements of Significance for State Heritage Place – Red outline is indicative of elements of significance, noting imperfect alignment of aerial imagery with parcel cadastre.

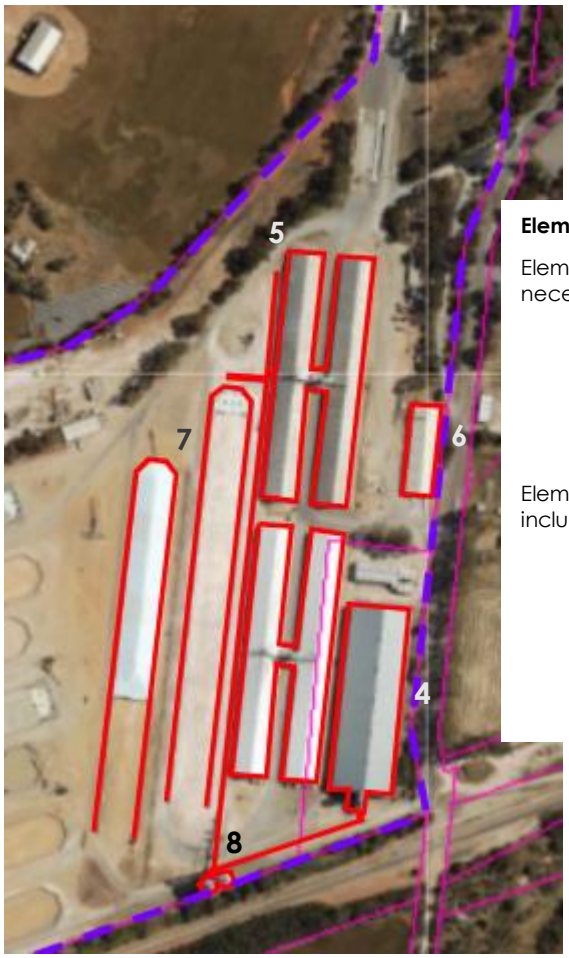
Elements of Significance:

Elements of heritage significance include (but are not necessarily limited to):

- 4-cell concrete vertical silo (1),
- 10-cell concrete vertical silo (2),
- Weighbridge and weighbridge office (3).

Elements not considered to contribute to significance of place include (but are not necessarily limited to):

- Sampling and weighing infrastructure (weighbridges, classification centre and offices, weighbridge offices) at Bunker Site,
- Western bunker bays.



Elements of Significance:

Elements of heritage significance include (but are not necessarily limited to):

- Two paired sheds (5),
- Horizontal shed silo (4),
- Horizontal shed silo (6),
- Conveyor systems and railway outloading bins (8),
- Two bunker storage bays (easternmost in red) (7).

Elements not considered to contribute to significance of place include (but are not necessarily limited to):

- Sampling and weighing infrastructure (weighbridges, classification centre and offices, weighbridge offices) at Bunker Site,
- Western bunker bays.

Bunker Site, Gladstone Bulk Grain Handling Complex, 16251 Horrocks Highway, Gladstone 5473 (CT 5912/49 D63290 A12, CT 5855/563 D187795 A473, Hundred of Booyoolie)

LEGEND **N ↑**

Parcel boundaries (Indicates extent of Listing)

Outline of Elements of Significance for State Heritage Place – Red outline is indicative of elements of significance, noting imperfect alignment of aerial imagery with parcel cadastre.

Physical Description

The Gladstone Bulk Grain Handling Complex consists of two separate sites, known as the Town Site and Bunker Site. Each site is described in turn:

Town Site

The Town Site is located on the railway line, with weighing facilities located two streets to the west. The site comprises the following elements:

1. 4-cell concrete vertical silo
   - Silo comprising four cylindrical cells,
   - Dual receival hopper partially enclosed by galvanised corrugated steel shed to eastern end,
   - Enclosed concrete grain elevator to eastern end with metal outloading spout suspended downwards over the receival hopper shed to the railway tracks,
   - Enclosed belt conveyor above silo cells,
   - Access cavity to western elevation and an access door to northern elevation,
   - Painted Viterra logo on southwestern concrete cell.

2. 10-cell concrete vertical silo
   - Silo comprising one block of six cylindrical cells and one block of four cells, conjoined in one freestanding structure,
   - Dual receival hopper and enclosed galvanised corrugated iron shed to northern end,
   - Enclosed concrete grain elevator shaft to northern end,
   - Enclosed belt conveyor system above silo cells,
   - Square direct cell outloaders, in steel, at base of each cell,
   - Three metal gravity outloading chutes to the eastern elevation, one suspended over the railway and two over the roadway,

- Galvanised corrugated steel shed with lean-to roof to southern end.

3. Weighing and sampling
   - Corrugated steel weighbridge office with window to the northern end with a window and metal porch to the east,
   - Ground-level, pit-type weighbridge with concrete foundation and checker plate steel platform.

Bunker Site

The Bunker Site is located on the south-western edge of Gladstone, approximately 600m from the Town Site. The site features the following:

4. Horizontal shed silo (1969)
   - Corrugated steel shed with exposed structural walls and box gable roof,
   - Dual receival hopper enclosed by galvanised corrugated steel shed to southern end with outloading bin above,
   - Enclosed corrugated steel grain elevator to northern end with overhead metal outloading spout passing through an outloading bin to conveyor belt system,
   - Access ladder with three balconies to northern end, with lean-to shed at base.

5. Paired sheds (1997)
    - Two pairs of white sheds with exposed structural walls and box gable roof,
    - Shared central receival hopper and outloading enclosed by galvanised corrugated steel shed connecting each white shed,
    - Shared grain elevator at centre of shed surrounded by exposed stairwell connected to a grain elevator stretching outwards over each shed to the east and west,
    - Large access doors with direct cell outloaders stationed along inside length of sheds,
    - Access doors at top of gable to both southern and northern ends connected to ladders,
    - Circular exhausts protrude from the northern end of each shed.

6. Horizontal shed silo
    - Rectangular shed with corrugated steel box gable roof and rendered walls,
    - Large sliding door to the southern end,
    - Circular wind-driven vents along tip of roofline and square external wall vents along base of walls,
    - Corrugated steel shed with lean-to roof attached to eastern side of building.

7. Bunkers (c.1990)
    - Fourteen above-ground bunkers each comprising three low retaining walls arranged in a U-shape,
    - Bunkers arranged in parallel rows,
    - Retaining walls sloping outwards and comprised of galvanised steel sheeting reinforced by triangular steel and timber framing.

8. Conveyor system and railway out-loading bins
    - Approximately 625m long, uncovered curved steel conveyor belt system connecting the paired sheds and horizontal shed silo (1969) to the railway outloading bins,
    - Corrugated steel cover to southeastern end, between the outloading bins and the horizontal shed,
    - Stretches along western length of paired sheds to bucket elevator surrounded by elevator tower and head platform,
    - Elevator connected to out-loading bins by grain delivery chute,
    - Two cylindrical steel bins with conical base over railway line, supported by steel support structure.

9. Weighbridges and Weighbridge offices
    - Two ground-level, pit-type concrete weighbridges with protection barriers on either side to northern end of paired sheds at entrance to site,
    - Traffic lights and boom barrier gates,
    - Corrugated steel office on stilts with lean-to roof to southwestern weighbridge,
    - One above ground, pit-type concrete weighbridge with protection barriers to the eastern side of the site,
    - Office on stilts to northern end of weighbridge.

10. Classification centre
    - Located to the northern end of bunker site,
    - Rectangular, corrugated steel, ground-level office flanked by two raised automatic sample probes,
    - Probe infrastructure connected to corrugated steel shed with shallow gable roof and undercover area to the north and south,
    - West of the automated station is a corrugated steel shed on stilts with a two-storey concrete office directly to its south,
    - Both offices are connected by a shared elevated walkway to the east.

Elements of Significance:

Elements of heritage significance include (but are not necessarily limited to):

Town Site

- 4-cell concrete vertical silo (1),
- 10-cell concrete vertical silo (2),
- Weighbridge and weighbridge office (3).

Bunker Site

- Two paired sheds (5),
- Horizontal shed silo (4),
- Horizontal shed silo (6),
- Conveyor systems and railway outloading bins (8),
- Two bunker storage bays (easternmost in red above) (7).

Elements not considered to contribute to significance of place include (but are not necessarily limited to):

- Sampling and weighing infrastructure (weighbridges, classification centre and offices, weighbridge offices) at Bunker Site (9, 10),
- Western bunker bays (highlighted in blue above) (7).

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History of the Place

Origins of Bulk Handling

Handling grain in bulk originated in the United States of America during the latter half of the eighteen century, beginning with Oliver Evans' invention of the first bucket grain elevator in the 1780s. Robert Dunbar improved Evans' design in 1843, leading to the adoption of elevators to load and unload grain from ships throughout North America.[1] The construction of bulk storage and management facilities followed, and by the beginning of the twentieth century most wheat in the USA and Canada was handled in bulk, with the latter operating a bulk handling system exceeding a capacity of 150 million bushels.[2] Other countries also began adopting the bulk system. Russia, for example, constructed a network of bulk grain elevators throughout their grain-growing provinces in the 1910s.[3]

Despite proven success overseas, and foreign purchasers' increasing preference for bulk imports of grain, the transition from bagged to bulk handling in Australia was slow. In South Australia, the transition took almost fifty years, making the State one of the last major wheat-producing regions in the world to adopt a bulk grain handling system. The delay was due in part to concerns about monopolisation and job losses, as well as the technical and financial challenges of equipping multiple port terminals with the requisite facilities.

Bagged Versus Bulk

During the first half of the twentieth century, South Australia's grain was bagged in four-bushel sacks made of jute or corn and manually handled from farms to local rail sidings, then onto ports and finally ships for exportation.[4] By this time, the process was inefficient and had many disadvantages, foremost being the amount of time and labour involved, with hundreds employed in Port Adelaide alone for the sole purpose of receiving grain and loading ships at harvest time.[5]

Bulk handling was first considered in South Australia in 1908, when a Royal Commission was appointed to investigate the marketing of wheat. Although the seven members of the House of Assembly commended the bulk handling system in principle, they ultimately decided the time was not right.[6] In 1914, Parliament again raised the question, when the House of Assembly commissioned Canadian silo firm Metcalf & Co. to examine the costs and benefits of substituting a 'system of handling wheat in

bulk for the present system of handling in bags.'[7] The resulting report exposed the major deficiencies of bagged handling over bulk handling, arguing:

- the cost of handling and transporting wheat in bags was excessive, with South Australian farmers losing £250,000 to £300,000 annually between purchasing and reselling their bags;
- the speed of handling in bags was slow, with each bag having to be sewn on the farm;
- the method of weighing bagged grain at country rail stations was inaccurate;
- the bag system congested railways, country stations, and ports;
- the bag system was highly susceptible to weather, vermin and pests;
- the cost of cleaning sacked wheat was excessive, with Australian wheat often incurring a large penalty overseas due to it not being fully cleaned;
- the free storage system was not equitable and gave merchants control of the crop.

Metcalf & Co.'s report proposed a £1,100,000 bulk handling system for the state comprised of a network of upcountry storage sites that would feed into five export terminals at Port Adelaide (Outer Harbor), Wallaroo, Port Pirie, Port Lincoln and Thevenard.[8] It was estimated that annual savings would be in the order of £275,000, and the system would pay for itself in four years. After considerable debate the motion lapsed due to heavy establishment costs and apathy from growers.[9]

In addition to the financial expense of the bag system, critics demonstrated that it led to inadequate inspection, grading, and selling systems. In 1888, South Australia developed the Fair Average Quality (F.A.Q.) system to grade grain in bags. Each harvest season, the Chamber of Commerce drew samples from every delivery point on a percentage basis, excluding obviously inferior lots. These samples were bulked and mixed before an official composite sample was fixed and its imperial bushel weight determined. The sample was thus a weighted average.[10] This system drew constant criticism, as it disadvantaged farmers who produced a higher grade of grain, and rewarded farmers who produced a lower grade, thus removing any incentive for farmers to grow and deliver the best and cleanest wheat possible.[11]

Allen R. Callaghan argues that the major problems that the advocates of bulk-handling faced were political, not technical.[12] Opposition was based on the cost of maintenance, fears of monopoly[13] and concerns that bulk handling 'would seriously affect the labour market by increasing the volume of unemployment.'[14] Journalist Maxwell Lamshed adds that high initial costs also played a role in arguments against bulk handling, with the proposed systems all requiring the purchase of special delivery trucks for the farmer and the establishment of siding storages and terminal silos.[15]

For the next thirty years numerous attempts to establish bulk handling in South Australia were made. In 1922, a farmers' co-operative company called the Farmers' Bulk

Handling of Grain Co-operative Limited took over the Metcalf plans. In 1933, an inquiry comprising over 290 pages of evidence taken from farmers across the State was presented to the government, and in 1934 the Public Works Committee submitted recommendations for the establishment of a bulk handling scheme. All attempts were unsuccessful.

The Second World War provided a stimulus for the development of bulk handling when the Australian Wheat Board (AWB) was empowered by the Minister for Commerce to sell and dispose of any wheat acquired by the Commonwealth, and manage all matters regarding its handling, care, movement and shipment.[16] As the War had severely curtailed exports, the AWB had to house wheat that would normally have been shipped. In response, the Board embarked on an extensive construction scheme between 1941 and 1943, erecting large bulk bins in Western Australia and Victoria. However, the scheme did not make it to South Australia during the war.[17]

Following the war, the AWB saw an opportunity for South Australia to adopt bulk handling after the Broken Hill Proprietary Company (BHP) constructed a jetty and conveyor belt at Ardrossan in 1948 to ship dolomite interstate. By 1951, an agreement was reached between the State Government, BHP, the South Australian Harbors Board (SAHB), and AWB to construct a bulk grain handling facility at the port, a decision motivated in part by a shortage of grain bags at the time.[18] Under the agreement, the AWB provided funding to construct a million-bushel capacity, horizontal shed with a sloping internal floor and gravity-fed underground conveyor, linked to the BHP belt. The new storage facility was opened by the Premier, Sir Thomas Playford, on 25 November 1952, marking the first silo constructed as part of the bulk handling system in the State.[19]

By the mid-twentieth century, most overseas buyers preferred their grain in bulk and were also prepared to pay more for grain in bulk. The continuation of bag handling would therefore have incurred major operational and cost imposts to buyers, providing a disincentive to purchase South Australian grain.[20]

The South Australian Co-operative of Bulk Handling

In 1954, the South Australian Wheat and Woolgrowers' Association (SAWWA) prepared a draft bill proposing the establishment of a bulk grain handling co-operative. The suggested entity was to be a non-distributing co-operative, with no share capital or dividends paid on shares, focussing only on bulk handling and storage of wheat, and was not to become a grain trading business.[21] Growers were to pay the company a compulsory toll of 3d per bushel for all wheat they produced, which was to be applied towards financing the construction and operation of bulk grain handling facilities.[22] The scheme provided for the construction of 100 upcountry sidings with an average capacity of 270,000 bushels each at an estimated cost of £4,850,000 or about 3s7d a bushel based on a normal wheat crop of 27,000,000 bushels.

To support their bill, SAWWA provided the Government with 5,000 signatures from growers committing to paying tolls of no less than 3d a bushel for 12 years for the purpose of raising capital in the company. [23] On 7 December 1954, SAWWA proceeded to register a new company, the South Australian Co-operative of Bulk Handling Limited (SACBH).[24]

The *Bulk Handling of Grain Act* (Bulk Handling Act) was assented to by Parliament on 7 July 1955, granting SACBH the exclusive right to handle wheat and other grains in bulk within South Australia. Their principal objective was to establish, maintain, and conduct 'a scheme or system for receiving, handling, transporting, and storing wheat and other grain in bulk' in South Australia.[25]

As detailed in SAWWA's bill, SACBH was a private co-operative wholly owned by grain growers, raising capital through tolls.[26] Growers who signed up as members when the company was first formed agreed to pay 3d per bushel for all grain delivered to storage. In subsequent years, as the storage network expanded, growers paid 6d per bushel. Members paid these tolls over a 12-year period, after which they were refunded their contributions in 12 annual instalments. No interest was earned or paid on the toll as all net profits were used to establish bulk handling facilities, as well as maintenance and improvements, as specified by the Act.[27] Within twelve months, 8,500 members had signed up to the Co-operative, growing to 17,388 members in 1961.[28]

The Silo Construction Project

Under the *Bulk Handling of Grain Act 1955*, SACBH had to promptly establish adequate bulk handling facilities at terminal ports and railway stations and sidings.[29] The original infrastructure plan envisaged five port terminals and 70 upcountry silos across the State at a cost of £5,000,000.[30] The initial phase of construction was largely funded by a £1,000,000 loan from the Commonwealth Bank, guaranteed by the State Government.[31] Membership tolls funded the rest. On 10 November 1955, SACBH purchased the Ardrossan silo from the AWB following agreements with the SAHB for lease of land and with BHP for use of its conveyor belt.[32] Within the first twelve months, more than 4,000,000 bushels of wheat was exported in 21 ships. Pressure quickly mounted to build additional bulk country storage that would feed the Ardrossan terminal.

The first upcountry silo in the State, a horizontal shed type, opened at Paskeville in January 1956. Bute followed a few months later. That same year, the Co-operative received approval to erect five horizontal shed-type silos at Balaklava, Snowtown, Blyth, Hoyleton and Brinkworth, and three cylindrical concrete vertical silos at Nantawarra, Redhill and Gulnare.[33] In just two years, a new terminal and 13 upcountry silos, representing 10 million bushels of storage, had been completed, with demand escalating thereafter. The order of priority for the erection of bulk handling facilities

was determined by the urgency of the needs of growers and the amount of grain produced in the various parts of the State.[34] Expansion echoed the growth of members, as the toll system financed silo construction: more members meant more upcountry silos.

The bulk system operated in stages. Growers would first deliver grain by road to either upcountry storage receival sites or directly to port storage, where it was collected, weighed, tested, graded and stored by SACBH for later shipment or sale to local markets. From upcountry storage, SACBH was then responsible for freighting the grain by rail and road to an export terminal. Finally, the grain was loaded onto shipping vessels through one of the seven port terminal loading facilities.[35]

By 1965, just ten years after the passing of the *Bulk Handling of Grain Act 1955*, the Co-operative had constructed provision for the storage of 48,877,000 bushels of grain.[36] The basic components of the bulk handling network were now established, propelled forward by bumper harvests in the late 1960s. By the mid-1980s, most receival centres had two or more intake systems to keep up with demand, with grain elevators capable of handling rates from 60 to 200 tonnes per hour. Additional storage at these facilities consisted of steel vertical, horizontal, bunker, and emergency shed type storages, and were usually a self-contained block with its own intake and outload equipment.[37] Shipping rates had also increased dramatically, terminals like Port Lincoln reaching loading speeds of 4000tph.[38]

Bulk Storage Design

Over the course of its 40-year history, SACBH utilised numerous designs for the bulk storage of grain.[39] The first type was the horizontal shed, which was used at early upcountry storage sites such as Paskeville and Brinkworth. Built using an in-house design, they were fast and affordable to construct.[40] However, the horizontal shed had inherent long-term disadvantages such as high labour, operating and maintenance costs. Its cell-less design also made it difficult to segregate grain types and grades, and to undertake grain inspection and fumigation.[41]

While the design was quickly abandoned in favour of concrete vertical silos, the Co-operative later utilised horizontal sheds for supplementary storage. In the 1960s, galvanised iron sheds with structural steel framework and bulkhead walls were used to establish 11 million bushels of emergency storage.[42] Shed storage capable of accommodating three separations of grain was also employed by SACBH in the 1990s. These were often built in pairs and shared a common elevator with loading rates of 400tph.[43]

Built at around 104 upcountry storage sites, for a total capacity of 79 million bushels, the concrete vertical silo became the "backbone" of South Australia's silo network.[44] They were based on a low-cost design submitted by the Australian silo construction company Haunstrup & Co. Comprised predominantly of either four or six main

cylindrical cells, their modular design was capable of extension by adding more cells. Multi-cell silos played a pivotal role in the existing storage system by providing segregation capacity for minor grains such as barley and oats, as well as grades of grain which in turn allowed growers to earn higher premiums for their grain.[45]

By the end of the 1960s, concrete vertical silos were becoming increasingly expensive to build, and SACBH turned to using steel vertical silos. The steel bins, either 1,800 tonne or 6,000 tonne in capacity, were quick to build, cost effective and had the further advantage of being gas-tight to facilitate more efficient grain fumigation and the use of nitrogen and carbon dioxide-controlled atmospheres.[46]

An increase in grower delivery pressures and the rising inability to segregate grains and grades and every silo site across the state resulted in the introduction of bunker storage in the 1980s. Bunker storage involved placing grain on surfaced ground buttressed with retaining walls of galvanised iron. Plastic sheeting was used to protect the grain from weather.[47] Established at strategic sites across the state such as Ardrossan, Gladstone and Kimba, this type of storage provided more rapid turnover times for growers and their trucking contractors.

Demutualisation

By 1980, SACBH had reached a peak membership of over 16,300 growers and were operating bulk grain storage facilities with a capacity of more than 4 million tonnes.[48] In 1989, the *Wheat Marketing Act* was passed, deregulating the domestic wheat market. This legislation removed the monopoly power of marketing authorities such as the AWB and the Australian Barley Board (ABB), as well as that of state-based bulk handling businesses such as SABCH.[49]

According to historian David Thomas, by the mid-1990s, escalating competitive forces were unleashed within South Australia's grain industry, resulting from the deregulation, privatisation, and consolidation of statutory rail, marketing, storage and handling organisations.[50] For SACBH, this process culminated in the repealing of the Bulk Handling Act in 1996, which took away the Co-operative's monopoly rights and gave federal organisations AWB and ABB significant powers to override State legislation.[51] The once amicable relationship SACBH had enjoyed with AWB and ABB became more competitive as the decade ended.

In response, SACBH appointed its first independent, non-grower director, Perry Gunner, to the board and by acquiring bulk handling facilities at seaports from the newly privatised SAHB, then known as Ports Corp. This move gave the Co-operative total control of the handling channel from receival point to ship.[52]

In August 2000, at a special general meeting, SACBH was formally demutualised by a vote of 96% of members. SACBH was restructured, abandoning its non-distributing co-operative business structure for a hybrid structure consisting of AusBulk, a conventional

company limited by shares, and a holding company, United Grower Holdings, a solely grower-owned public company that in turn owned 51% of AusBulk.[53] The new business was known at AusBulk-UGH.

At the same time, ABB privatised into ABB Grain Ltd. During the early 2000s, the entire Australian grain industry was highly competitive, with the newly privatised AWB Ltd. and ABB Grain Ltd. and the demutualised AusBulk-UGH all keen to maximise their shareholder returns via diversification, acquisition, or mergers. AusBulk-UGH became a takeover target and merged with ABB Grain Ltd in September 2004.[54] In September 2009, the company was acquired by Viterra Canada for $1.6 billion.

Mid North Region

Situated well below the geographical centre of the state, South Australia's Mid North region encompasses a roughly rectangular area north from Kapunda to Carrieton and from Port Pirie to the pastoral county east of Burra.[55] Topography, climate and natural resources, most notably copper, cereal grain and wool, determined the principal industries and settlement patterns in the region. Copper was discovered at Kapunda in 1842 and Burra in 1845 with mining activities continuing into the late 1870s.

Sheep and cattle runs were established in the early 1840s. Demand for arable farm land during the 1860s resulted in major land reform legislation such as the *Waste Land Amendments Act 1869*. The Act enabled prospective farmers to buy land on credit transforming many sheep runs into small wheat farms.[56] With these schemes, wheat growing and grazing sheep for wool and meat became, and remain, the dominant farming activities in the region.

Gladstone

Gladstone is situated on Nukunu Country. Prior to colonisation, the Nukunu People lived in a harmonious and respectful relationship with the environment, only hunting or collecting the animals and plants they needed to sustain life and culture.[57] European settlement in the area from the 1840s onwards devastated the Nukunu people and culture. Land clearing for agricultural and pastoral purposes, the introduction of invasive species such as Salvation Jane, and the relocation of many Nukunu people to places like Point Pearce and Point McLeay had severe consequences for Nukunu traditions, customs, language and survival, and by the late 1800s, the population of Nukunu People had diminished drastically.[58] Today, many Nukunu live in Adelaide but maintain a close connection to country.[59]

Wheat was first grown in the Gladstone area in 1869 as a trial, with commercial production of wheat commencing in 1870.[60] The privately-surveyed town of Gladstone was established in 1872 by civil servant and medical practitioner, Matthew Moorhouse (1813-1876), on a portion of Booyoolie Homestead, once a prosperous sheep and cattle station that was resumed over time by the government for

agricultural development.[61] The resumed land was gazetted as the Hundred of Yangya on 15 July 1869.[62] Gladstone was one of two townships surveyed in the Hundred, the second being the nearby Government town of Booyoolie. Gladstone's central location within the surrounding agricultural area and its proximity to Port Pirie brought about the town's rapid development, and by the end of 1872, a mill, general store, public house and the first of numerous private residences were under construction.[63]

Early wheat production in the area experienced regular highs and lows as farmers struggled with problems of weeds, poor soil and diseases such as rust and smut. Wheat varieties grown included Purple Straw, Allora, Blount's Labrigg, Bencubbin and Federation. Following the opening of the railway line from Port Pirie in 1876, Gladstone became a major grain receival site.[64] Each harvest, growers would cart their grain to the railway siding by wagon, trolley or dray in three-bushel bags, which were then stacked to await the rail journey to Port Pirie and later Port Adelaide. Sometimes these bags could wait at Gladstone for up to two years, by which time they were typically infested with mice.[65]

Development of bulk grain storage at Gladstone

Bulk grain handling arrived in Gladstone in time for the 1957/1958 harvest season.[66] A four-cell, concrete vertical silo was built on the western side of the railway line, along Gladstone Street. Unlike many other receival sites, the weighbridge and weighbridge office were established away from the silos and the railway line, on a separate parcel of land between Horrocks Highway and First Street. In 1965, following consecutive bumper harvests which filled the silos at Gladstone to capacity, the South Australian Co-operative of Bulk Grain Handling (SACBH) erected another four-cell concrete vertical silo to the north of the first.[67] An additional six cells were added to the silo at a later date.

An additional horizontal storage shed was erected along the railway line in the 1960s. The shed, initially built to the south-west of the original silo site, was later moved to the receival site at Andrews, a locality 45km southeast of Gladstone.[68] In 1969, the SACBH were struggling to cater for the carry-over of 40 million bushels of unsold grain and an estimated 100-million-bushel crop expected to arrive over the coming harvest. This was not an isolated problem, and the Commonwealth Government launched a national emergency programme to build storage for the over-quota wheat. $10 million was made available for the construction of two-million-bushel horizontal silos at Port Lincoln, Wallaroo, Tailem Bend and Gladstone.[69] The horizontal silo at Gladstone was built adjacent to the horizontal storage shed erected earlier in the decade.

During the 1990s, grain production grew exponentially due to the adoption of continuous cropping methods and better control of soil, root and foliar diseases in

farm management practice. Further diversification of crops also decreased effective storage space whilst increasing the demand for storage segregations.[70] In response, the SACBH developed 33 strategic sites across the state. By consolidating major operations and upgrading a small number of key sites in each division, the SACBH sought to boost storage capacity and offer segregations for all grains and grades. These strategic sites also offered growers expanded services such as increased operating hours and more efficient turnaround times which, in turn, kept charges at a reasonable rate.[71] This strategic plan increased SACBH's storage capacity by 5.2 million tonnes between 1992 and 2000, with more storage being built in this period than in the previous 40 years combined.[72]

Upgrades to the Gladstone facility began in the late 1980s with the acquisition of farmland around the horizontal shed silos. SACBH constructed rows of bunker storage on it in preparation for the 1990/1991 harvest and later it became known as the bunker site.[73] Storage at the strategic site underwent further expansion in late 1997, with the erection of two 45,000 tonne paired sheds connected to two 1,000 tonne outloading bins, located over the railway line.[74] These new sheds provided better segregation of grain and faster intake and outturn rates.[75] Receival hours were extended to 24 hours, 7 days a week.

Prior to the 2019/2020 season, site operator Viterra made several improvements to the bunker site at Gladstone to improve efficiency, safety and service to its customers. Changes included a new state-of-the-art classification centre, automatic grain probes, a fully automated 40 metre weighbridge, and shed resealing.[76] The cost of these works totalled $4 million.

Chronology

Year	Event
1846	Herbert Bristow Hughes occupies 200 square miles of land in the colony's mid-north. He establishes a sheep and cattle station called Booyoolee Station.
1847	Hughes is issued an occupation lease for his land.
	Strangways Act is passed.
1869	The Hundred of Yangya is proclaimed.
	Wheat is first grown in the Gladstone area.
1872	October: The township of Gladstone is privately surveyed on Section 31, Hundred of Yangya, by Frederick George Richardson of Saddleworth.
1876	The railway from Port Pirie to Gladstone via Crystal Brook is opened.
	The District Council of Yangya is proclaimed.[77]
1879 - 1880	Gladstone Gaol (SHP 12704) is erected at a cost of about £25,000.

1880 August: The District Council Yanga is renamed the District Council of Gladstone.

1881 The Local Court opens at Gladstone.

1883 7 March: the Corporation of the Town of Gladstone is proclaimed.

1889 Pipes are laid connecting Gladstone with the Beetaloo Reservoir.

1930 Annual wheat production in the Gladstone district reaches 210,000 bushels.

1933 May: The Corporation of the Town of Gladstone and the District Council of Gladstone amalgamate.

1957 A four-cell concrete vertical silo is built by the SACBH at Gladstone.

1965 An additional four-cell concrete vertical silo is erected north of the original silos.

1971 The SACBH acquires a portion of Section 3533, Hundred of Booyoolie to the south-west of the original Gladstone grain receival site (CT 3787/62). SACBH builds a horizontal storage shed on the site. This is later known as the Bunker Site.

1975 The SACBH acquires a portion of the railway reserve to the south-west of the original grain receival site (CT 4057/883).

1984 The 1970s horizontal storage shed is moved to the receival site at Andrews. 45km southeast of Gladstone.

1986 The intake rate of the concrete vertical silo elevators is upgraded to 200 tonnes per hour.

1989 Major mechanical and electrical work is undertaken at Gladstone. This includes upgrading of outloaders and installation of indication, underspeed sensors and high level outloader alarms.

1990 Bunker storage is built at Gladstone.

1988 - 1991 The SACBH acquire the remaining allotments of Section 3533, Hundred of Booyoolie to Gladstone's south-west to expand their storage facility (CT 4295/375, CT 4295/376, CT 4387/326).

1996 The *Bulk Handling of Grain Act* is repealed.

1997 Additional storage in the form of paired sheds is erected at Gladstone's Bunker Site.

1998 The Australian Wheat Board privatises to form AWB Ltd.

1999 The Australian Barley Board privatises to form ABB Grain Ltd.

2000 The SACBH demutualises to form AusBulk, and United Grower Holdings (UGH).

2001 - 2002 Gladstone receives a record breaking 553,162 tonnes of grain in the 2001/2002 harvest.

2004 ABB Grain Ltd., AusBulk, and UGH merge, resulting in the creation of ABB Grain Ltd.

2009 Viterra Canada acquires ABB Grain Ltd for $1.6 billion in September.

2012 Glencore Grain acquires Viterra Australia and Canada.

2019 Viterra make several upgrades to the Bunker Site at Gladstone, including a new classification centre, automatic grain probes and automated weighbridge.

Bunker storage is increased to manage overflow at Roseworthy and Snowtown.

2020 Glencore Grain rebrands to Viterra globally.

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SITE DETAILS

Gladstone Bulk Grain Handling Complex **PLACE NO.: 26603**

16251 Horrocks Highway, Lot 14 Gladstone Street, and Lot 6 Horrocks Highway, Gladstone SA 5473

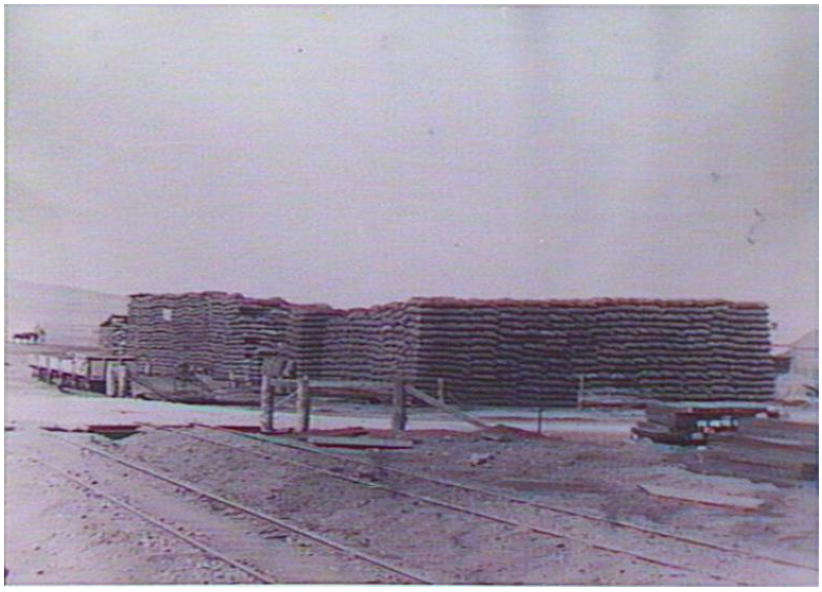
DESCRIPTION OF PLACE:	Complex comprised of a Silo Site and Bunker Site. The Silo Site features a four-cell concrete vertical silo, a ten-cell concrete vertical silo, weighbridge and weighbridge office. The Bunker Site features two horizontal shed silos, two paired sheds connected to railway outloading bins, weighbridge and weighbridge offices, and a classification centre.	
DATE OF CONSTRUCTION:	1957 - 1997	
REGISTER STATUS:	Council identified: 1 March 2024	
	Provisional entry: 26 June 2024	
CURRENT USE:	Bulk grain storage facility	
	1957 - present	
LOCAL GOVERNMENT AREA:	Northern Areas Council	
LOCATION #1:	**Street No.:**	16251
	Street Name:	Horrocks Highway
	Town/Suburb:	Gladstone
	Post Code:	5473
LAND DESCRIPTION:	**Title Reference:**	CT 5912/49 D63290 A12, CT 5855/563 D187795 A473
	Hundred:	Booyoolie
LOCATION #2:	**Street No.:**	Lot 14
	Street Name:	Gladstone Street
	Town/Suburb:	Gladstone
	Post Code:	5473
LAND DESCRIPTION:	**Title Reference:**	CT 6142/183 D78107 A14
	Hundred:	Booyoolie and Yangya
LOCATION #3:	**Street No.:**	Lot 6

	Street Name:	Horrocks Highway
	Town/Suburb:	Gladstone
	Post Code:	5473
LAND DESCRIPTION:	**Title Reference:**	CT 5834/834 D7491 A8, CT 5834/834 D7491 A9
	Hundred:	Booyoolie

PHOTOS

Gladstone Bulk Grain Handling Complex **PLACE NO.: 26603**

16251 Horrocks Highway, Lot 14 Gladstone Street, and Lot 6 Horrocks Highway, Gladstone SA 5473

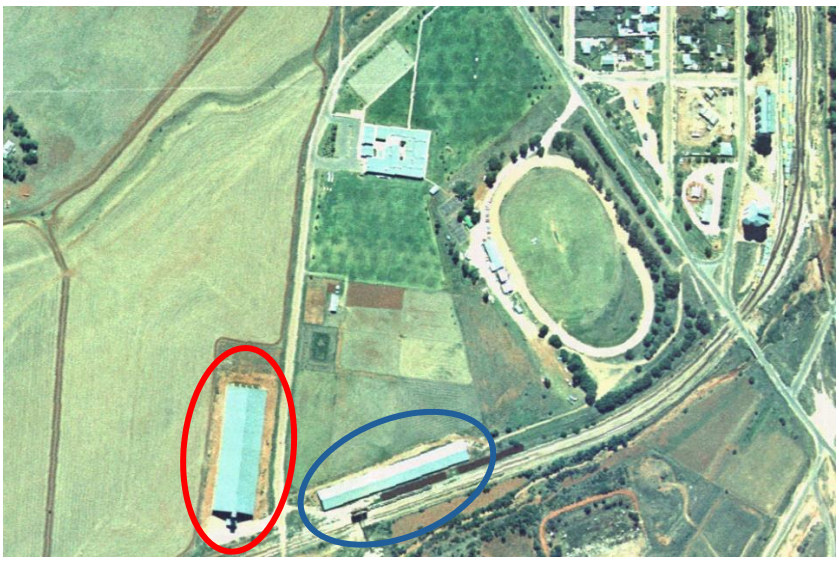


45,000 bags of wheat stacked ready for transportation at Gladstone in 1884.

Source: SLSA B 43217

Bunker storage at Gladstone during the 2001-2002 harvest. Gladstone received a record 553,162 tonnes of grain during the season.

Source: David Thomas, *A Golden Era*, p.52



The Gladstone Bulk Grain Handling Complex in 1979. The shed (circled in red) was the first structure built on the Bunker Site. The grain storage shed to its east (circled in blue) was later moved to the storage facility at Andrews.

Source: ENV Maps

Northern elevation of the paired sheds.

Source: DEW Files, March 2025

Southern elevation of paired sheds with shared receival hopper and elevator.

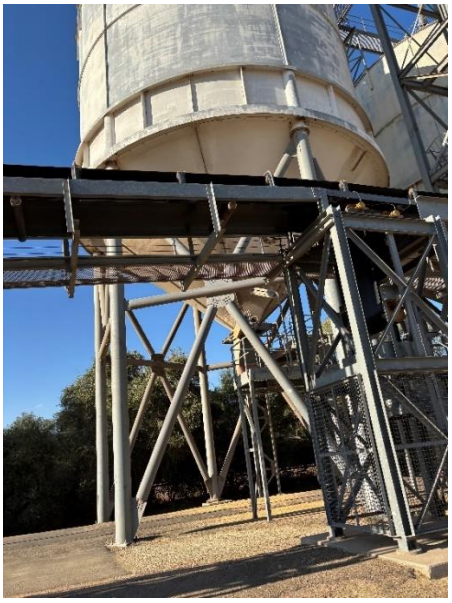
Source: DEW Files, March 2025

Belt conveyor along western side of paired sheds connecting storage to railway outloading bins (left) and a drive-over-hopper (right).

Source: DEW Flles, March 2025

Conveyor belt system connected to railway outloading bins.

Source: DEW Files, March 2025



Railway outloading bins.

Source: DEW Files, March 2025

Horizontal shed silo built in 1969.

Source: DEW Files, March 2025

Grain elevation, receival hopper and outloading chute to eastern elevation of the horizontal shed.

Source: DEW Files, March 2025

The horizontal shed silo at Gladstone.

Source: DEW Files, March 2025

Western elevation of the horizontal shed silo.

Source: DEW Files, March 2025

Edge of bunker storage with railway outloading bins.

Bunker storage looking west.

Bunker storage looking south east. When filled with grain, each bay is covered with tarpaulins and secured with tyres.

Source: DEW Files, March 2025

Eastern weighbridge and weighbridge office.

Source: DEW Files, March 2025

Classification centre erected in 2019 with paired sheds in background.

Source: DEW Files, March 2025

Classification centre with automatic grain probe system.

Source: DEW Files, March 2025

Classification centre.

Source: DEW Files, March 2025

Southern concrete vertical silo (left) of the town site with receival hopper (right).

Source: DEW Files, March 2025

Northern concrete vertical silo (left) and treadplate weighbridge and weighbridge office (right).

Source: DEW Files, March 2025

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